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Conical feature of damage in near surface region of TiO₂ and Al₂O₃ irradiated with swift heavy ions

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The study of latent track morphology in oxides irradiated with swift heavy ions is an important aspect in the ongoing quest to understand the mechanisms responsible for their creation. Latent tracks are usually assumed to be cylindrical when employing indirect methods such as RBS/C to determine damage cross sections and infer equivalent track diameters from this data. Track diameters obtained in this way are then compared with direct TEM observations (usually in plan view) for validation. In this report cross sectional TEM results obtained from near surface region of TiO2 and Al2O3 single crystals irradiated by high energy Xe and Bi ions will be presented. Conical feature of damage created in these samples is discussed since it might have tremendous implications for the correct interpretation of indirectly obtained track parameters.

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